PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Application No.: 10/509,398	Examiner: Ives J. Wu
Applicants: Clements et al.	Art Unit: 1797
Title: Exhaust Gas Treatment	Confirmation No.: 5844
Filed: October 3, 2005	
Atty. Docket No.: M02B124	

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

PRE-APPEAL BRIEF REQUEST FOR REVIEW

Dear Sir/Madam:

Applicants appeal the final rejections of claims 1, 3-5, 8, 10-11, 13-18, 20-21, 23, and 25-27. Specifically, claims 1, 3-5, 18, 21 and 25-27 are rejected under 35 USC 103(a) as being unpatentable over US Patent No. 6,284,022 to Sachweh et al. (hereinafter referred to as "Sachweh"). Claims 8, 10-11, 13-17, 20, 23, and 28 are rejected under 35 USC 103(a) as being unpatentable over Sachweh in view of European Patent No. EP 1,023,932 to Smith et al. (hereinafter referred to as "Smith"). Claims 1, 3 and 5 are rejected under 35 USC 103(a) as being unpatentable over US Patent No. 4,106,918 to Fujikawa et al. (hereinafter referred to as "Fujikawa"). Claims 1, 3, and 5 are rejected under 35 USC 102(b) as being anticipated by US Patent No. 4,381,190 to Carron et al. (hereinafter referred to as "Carron").

BACKGROUND

The present application is directed to methods and apparatuses for scrubbing a halogen-containing gas stream. The gas stream is contacted with water at a temperature of at least 40°C for facilitating chemical reaction between the gas stream and the water. Before or after the above-mentioned step, the gas stream is contacted with water at a temperature of less than 30°C for dissolving the gas stream in the water at a cooler temperature.

Increasing the temperature of the water in a scrubbing process might have been expected to reduce the rate of dissolution of halogen in the water, thereby reducing the scrubbing efficiency. *See, the specification, page 2, lines 27-32.* Surprisingly, Applicants have found that the effectiveness of removal of halogen from a gas stream is improved when warm water is used. *See, the specification, page 3, lines 9-11.* It is believed that may be because at such temperature, the halogen reacts with the water more readily in favor of a higher rate of uptake of halogen by water. *See, the specification, page 3, lines 11-20.*

DISCUSSIONS

1. Sachweh teaches away from a two-step scrubbing method, and any contrary assertion violates the established legal precedent.

The objective of Sachweh is to consolidate multiple steps of scrubbing process into a single-step method. *See, col. 2, lines 20-25.* Sachweh sees a drawback in conventional methods that they only allow the removal of either gaseous contaminants or particulate aerosols. *See, col. 2, lines 10-12.* Sachweh drives the point further by saying "in practice this entails high investment costs, since it is necessary to provide two, generally different types of installation." *See, col. 2, lines 13-17.* It is clear that Sachweh teaches away from a two-step method.

The Examiner asserts "although Sachweh disclose[s] [a] single-step method, the background teaching of two-step scrubbing is disclosed by Sachweh, therefore the negative teaching of Sachweh still reads on the limitations as claimed." *See, the Final*

Office Action, page 9, lines 9-12. However, Applicants respectfully submit that Sachweh's background section does not disclose all the limitations recited in the claimed invention. For example, independent claims 1 and 18 both disclose that the hot water is at a temperature of at least 40°C and the cold water less than 30°C. Although Sachweh teaches using both hot water and cold water in a scrubbing process, it does not mention at what temperature the water is considered hot or cold. *See, col. 1, lines 55-65.*

It would not have been obvious for a person skilled in the art to modify Sachweh by setting the temperature of the hot water to be at least 40°C and the temperature of the cold water to be less than 30°C. The totality of the prior art must be considered, and proceedings contrary to accepted wisdom in the art is evidence of non-obviousness. *In re Hedges, 783 F.2d. 1038 (Fed. Cir. 1986).* Immediately after the discussion of the two-step scrubbing method, Sachweh criticizes the method as failing to "provide satisfactory simultaneous removal of particulates and gaseous contaminants." *See, col. 1, lines 65-67.* In other words, Sachweh discourages a person skilled in the art from making any further specific improvements upon the denounced two-step scrubbing method.

As such, claims 1, 3-5, 8, 10-11, 13-18, 20, 21, 23, and 25-27 are not obvious over Sachweh under 35 USC 103(a).

2. It is not obvious to modify the water temperature in Fujikawa from 37°C to a temperature equal to or above 40°C.

Although the Examiner acknowledges that Fujikawa fails to teach "the water at a temperature of at least 40°C," the Examiner asserts that Fujikawa's teaching of a water temperature at 37°C reads on the claim limitation by obviousness. *See, the Final Office Action, page 9, lines 13-18.* Applicants respectfully disagree with the assertion.

Fujikawa's objective is to reduce the size of condenser in condensing vaporized fluorine compounds. *See, col. 3, lines 11-18.* Fujikawa achieves its objective by breaking one large condenser into two small condensers, wherein the first condenser is supplied with cold water to condense approximately 20 to 90% of the fluoride vapor, and the second condenser is supplied with even colder water to condense the reaming fluoride vapor. *See, col. 3, lines 19-34.* In Example 1 of Fujikawa, the cooling water temperatures for the first and second condensers are 37°C and 27°C, respectively. *See,*

col. 4 lines 67-68, and col. 5, lines 15-17. In Example 2, the cooling water temperatures for the first and second condensers are 35°C and 27°C, respectively. *See, col. 5, lines 49-50 and lines 58-61.* Clearly, Fujikawa prefers the water temperature to be lower instead of higher, as it increases the condensation efficiency. 37°C is the highest temperature Fujikawa selects for the cooling water. It would not have been obvious for a person skilled in the art to modify the temperature of the cooling water from 37°C to 40°C, as the modification would make the condensation less efficient. Absent any suggestion or motivation found in Fujikawa, Applicants respectfully submits that such modification as proposed by the Examiner is arbitrary and unreasonable.

As such, claims 1, 3, and 5 are not obvious over Fujikawa under 35 USC 103(a).

3. Carron does not anticipate the claimed invention because it fails to disclose contacting the gas stream with water for "facilitating chemical reaction between the gas stream and the water" and "dissolving the gas steam in the water."

The Examiner asserts that Carron anticipates the claimed invention. However, Carron teaches an opposite process, in which water is to be extracted from a wet chlorine gas in order to produce dry and compressed chlorine gas. *See, abstract.* The differences between the claimed invention and Carron are numerous. For example, the claimed invention uses water for scrubbing, whereas Carron uses concentrated sulfuric acid. *See, abstract.* In Carron, water scrubbing simply would not work, because it cannot extract water from the wet chlorine gas.

Acknowledging the differences between Carron and the claimed invention, the Examiner further asserts that there is water present in Carron's drying process, and therefore it reads on the claimed invention anyway. *See, the Final Office Action, page 10, lines 1-3.* Applicants respectfully submits that the water present in Carron's drying process is not for the purposes of "facilitating chemical reaction between the gas stream and the water" and "dissolving the gas steam in the water" as the claimed invention. In Carron, the water presence is the result of a chlorine drying process, instead of an intended medium for absorbing halogen into it.

As such, claims 1, 3, and 5 are not anticipated by Carron under 35 USC 102(b).

CONCLUSION

Applicants have made an earnest attempt to place this application in an allowable form. In view of the foregoing remarks, it is respectfully submitted that the pending claims are drawn to a novel subject matter, patentably distinguishable over the prior art of record. Examiner is therefore, respectfully requested to reconsider and withdraw the outstanding rejections.

Should Examiner deem that any further clarification is desirable, Examiner is invited to telephone the undersigned at the below listed telephone number.

Applicants do not believe that any additional fee is due, but as a precaution, the Commissioner is hereby authorized to charge any additional fee to deposit account number 50-4244.

Respectfully submitted,

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